



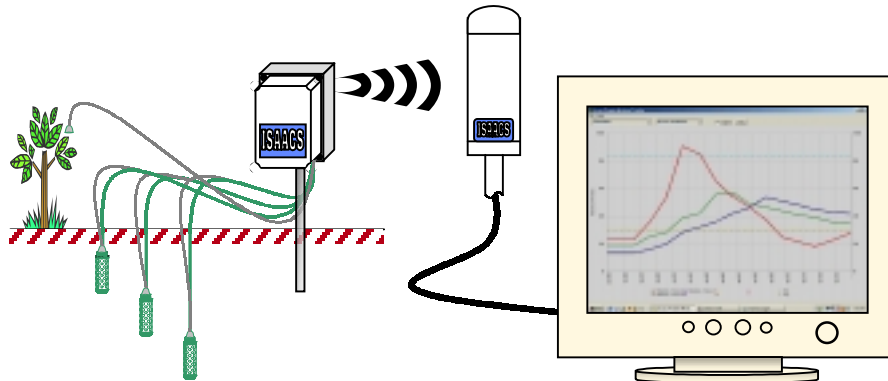
## SOIL MOISTURE MONITORING SYSTEM (IMMS) Users Manual

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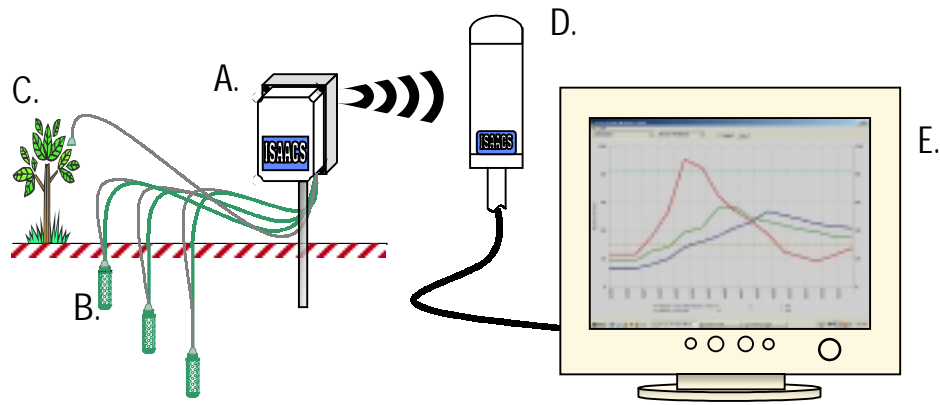
### *THE ISAACS SOIL MOISTURE MONITORING ADVANTAGE*

The Isaacs Remote Soil Moisture Monitoring System is designed to make tracking soil moisture levels easier and faster by reporting via radio to a central computer for data logging and graphic display. **Most of the information needed to operate the system can be found in this manual. However, if you have questions please contact your distributor or Isaacs direct.**



In-field measurements of soil moisture help determine how fast the soil is being depleted of moisture, and **WHEN** to initiate an irrigation cycle to replenish moisture for maximum plant growth. By obtaining soil moisture readings in different areas of the field, and at different depths in the root zone, an irrigator can establish **HOW MUCH** water to apply and **WHERE** to apply it. With experience, this “Irrigation to Need” can help:

- *Reduce Water Usage*
- *Lower Energy Bills*
- *Increase Crop Yields and Quality*
- *Prevent Excessive Leaching of Fertilizers and Chemicals*
- *Reduce Crop Disease*



## COMPONENTS USED IN THE ISAACS MOISTURE MONITORING SYSTEM

- A) **Remote Moisture Tracker™ (RMT)** – *processes sensor data and sends it to computer*
- Reads up to 6 soil moisture/temperature sensors and 2 additional temperature sensors.
  - Updates and sends readings every four hours to your computer.  
(If needed, readings can be set at other time intervals.)
  - Battery powered – batteries last all season when taking reading every four hours.
  - Wireless transmissions – **NO FCC LICENSE IS REQUIRED.**
- B) **Moisture/Temperature Sensor**– *installed in the ground, connected to RMT*
- The Isaacs system uses matrix type sensors because pulling water from the matrix approximates a measure of the amount of water available to the plant. Other types of sensors measure volumetric water content, but some of the water may be locked up in the soil and not available to the plant.
  - A temperature sensor is imbedded in the moisture sensor to improve the accuracy of moisture readings and provide soil temperature at each depth.
  - Normal salinity levels do not affect the sensors.
  - The sensors do not require removal during winter in cold climates as they are unaffected by freezing temperatures.
- C) **Temperature Sensors** – *connected to RMT*
- Additional sensors can be installed to read air, crop canopy, fruit core or other temperatures. The RMT can read a total of eight temperature sensors, including those in the moisture sensor.
- D) **SmartReceiver™** – *Connected to the computer*
- Receives wireless data from up to 256 Remote Moisture Trackers
- E) **Isaacs Moisture Management Software (IMMS)** – *installed in your computer*
- Logs moisture and temperature sensor data – You can view current profile or historic data.
  - Graphing function shows important trends.
  - Adjustable reference lines can be set for wet (field capacity) and dry (stress level) limits.
  - Print feature allows you to make hard copies of data and graphs.
  - Has adjustable display range for closer observation.
  - Displays “Alarm” message for low voltage on either the 3V & 9V RMT batteries.
  - Displays “Alarm” if communications with the RMT has been lost for 18 hours.

## SETTING UP YOUR GRAPHS

Before you can use the graphs, you must first set them up in a manner that is most helpful to you. **The graphing feature of the IMMS software is highly flexible.** You can create and customize as many graphs as you desire. Each graph can display up to 8 input sensor values. The sensors can be from a single RMT or several RMT's. **Use the graph creation tool to group sensors into useful reporting groups.**

### TO CREATE A GRAPH:

- A. Go to Drop Down Window (top left of screen)
  - a) Select **“Make a New Graph Set”**
  - b) Name the graph and type the name in the input window
  - c) Press the **“Setup”** button
- B. Use Drop Down Window (at bottom of screen) to add desired SENSORS to the Graph
  - a) Name the sensor and type the name in the input window.
  - b) In the box (to the right of the SENSOR name): check the box for a DASHED graph or leave unchecked for a SOLID graph line.
- C. Adjust the upper (WET) and lower (DRY) moisture reference lines using the scroll boxes at the lower right of the screen.
- D. To exit Setup, change the size of the screen (for instance hit the maximize button)

*Note: Once you have created the graph sets you can come back to them repeatedly or modify them as necessary.*



Use these buttons to temporarily change the “TOP” and “BOTTOM” graph values

Use these scroll buttons to adjust the “WET” and “DRY” limits.

The graph displays are “Recent Day”, “Recent 3-days”, “Recent Month”, and “Custom Date Range”. The display range can be changed without recreating the graph set. You can display more than one graph in the monitor window by resizing the individual graphs. Check the **“Legend”** box if you want to see the list of sensors graphed. The Isaacs graphing software is very flexible; so now go ahead and try it.

## **TYPICAL QUESTIONS AND GENERAL PROBLEM SOLVING INFORMATION**

- A) **Do I have to keep my computer on all the time?** Yes, your computer (in fact the system including repeaters, etc.) has to be on to receive and data log the soil moisture and temperature readings. If your computer is turned off, then it will miss the transmission of data for that time period
- B) **The “Check Alarm” message appeared on the screen. What do I do?** Click “Alarm” in the menu bar in the upper left hand corner of the screen. Click on “ **Check Alarm**”. The window that comes up will tell you the status of the alarm. The three types of alarm are:
1. **Signal Not Received**, means the specific RMT has not reported in last 18-hours. Locate the problem and fix it. The problem could be a removed or damaged RMT, or a non working repeater if one is in the system.
  2. **3 volt Transmitter Batter Low** – change the transmitter battery
  3. **9 volt RMT Battery Low** – change the RMT battery
- C) **How do I go about changing the batteries?** There are two batteries in your Remote Moisture Tracker : a 9VDC battery to power the sensor circuit board and a 3VDC battery in the radio transmitter. The system is constantly monitoring the condition of both batteries. As indicated above, if either battery needs replacing, you will get a “Check Alarms” on your computer screen.
- To replace either battery you must remove the lid of the Remote Moisture Tracker.
- Caution:** the transmitter mounts on the inside of the enclosure cover and is connected to the sensor board by a cable. Do not pull the enclosure lid too far away from the enclosure body or damage to the components may result.
- To change the transmitter battery, snap off its lid with the blade of a small screwdriver. Replace the battery and **push the reset button**. If you forget to push the reset button that Remote Moisture Tracker may not operate.
- D) **How do I know if a sensor wire is cut?** If a sensor is not hooked to the Remote Moisture Tracker board it will show a steady reading at the bottom of your graph. A very dry sensor will also read at the bottom of the graph.
- E) **How should we go about trouble shooting?** First, make sure the installation is correct. Second, make sure all components are powered up with correct power.
- F) **IMPORTANT:** For consistent readings...
- **The sensor must have complete contact with the soil.**
  - **Placing the sensor at the depth selected during RMT programming is vital to accurate interpretation of the reported data.**
  - **Do not coil excess wire between the sensor and the RMT box as the coiled wire can cause irregular readings.**

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**Rev.1-03**  
**Soil Moisture/ files as IMMS install cd**  
**HELP FILES**